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10/532,346	04/22/2005	Elena Costa	1454.1610	3925
21171	7590	03/09/2007	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			HOLLIDAY, JAIME MICHELE	
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			2617	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/532,346	COSTA ET AL.
	Examiner Jaime M. Holliday	Art Unit 2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 09 February 2007.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-28 is/are pending in the application.
 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
 5) Claim(s) 15-28 is/are allowed.
 6) Claim(s) _____ is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 9, 2007 has been entered.

Response to Amendment

Response to Arguments

2. Applicant's arguments with respect to **claims 15-28** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 15, 16, 18-20, and 26-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Guimont et al. (U.S. Patent # 6,052,593)** in view of **Ma et al. (Pub # 2004/001429 A1)**.

Consider **claim 15**, Reinhardt clearly shows and discloses frequency plan revision proposal is evaluated to determine whether it is compatible with the current cell configuration by insuring that sufficient frequencies having appropriate operating modes are available for assignment to meet the traffic and control channel requirements and availability of the included cell transceivers.

Available frequencies in the cellular frequency band are divided in accordance with the frequency plan into frequency groups **14**, with the frequency groups assigned amongst the cells **10** of each cluster **12** such that the radio frequencies of the cellular band are reused in each cluster, reading on the claimed "method for managing radio resources of a frequency band having sub-carriers in a cellular radio communications system configured as a multi-carrier system, comprising allocating the sub-carriers to the radio cells, to make the sub-carriers available for at least one frequency band having sub-carriers, to make the sub-carriers available to each radio cell for transmission of information; and allocating the sub-carriers being allocated by assigning each of the sub-carriers only to a subset of the radio cells including at least two radio cells for transmission of the information," (abstract, fig. 1, col. 4 lines 19-40).

However, Guimont et al. fail to specifically disclose that the sub-carriers are allocated during different time periods.

In the same field of endeavor, Ma et al. clearly show and disclose a method of communicating over a shared OFDM band comprising: generating and transmitting a low rate mode OFDM transmission in a first frequency band of the OFDM band; generating and transmitting a burst-mode transmission in a second frequency band of the OFDM band, the first frequency band being distinct from the second frequency band (paragraph 86). FIG. 2 shows an example of time-frequency resource allocation for two different OFDM modes referred to as Mode-1 and Mode-2, which changes over time (Therefore, the modes are

representative of periods of time). For symbol periods t_i through t_{i+9} , a first allocation is shown with the first frequency band 51 assigned to Mode-1 traffic and the second frequency band 53 assigned to Mode-2 traffic. During symbol duration t_{i+10} , t_{i+11} , the entire OFDM band 50 is dedicated to Mode-2 traffic. During symbol duration t_{i+10} and onward, the first frequency band 51 is assigned to Mode-2 traffic while the second frequency band 53 is assigned to Mode-1 traffic, reading on the claimed "allocating radio resources for at least one frequency band having sub-carriers, to make the sub-carriers of the at least one frequency band temporarily available during a first time period, and allocating the radio resources to the radio cells during a second time period," (paragraphs 124, 125).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to assign different sub-carriers to modes that are implemented at different periods as taught by Ma et al. in the method of Guimont et al., in order to efficiently create a frequency plan.

Consider **claim 16**, Li et al., as modified by Guimont et al., clearly show and disclose the claimed invention **as applied to claim 15 above**, and in addition, Guimont et al. further disclose each cell 10(1) in the service area is assigned use of radio frequencies of the cellular band in frequency group A, reading on the claimed "assigning makes at least one of the sub-carriers available to exactly one radio cell in the at least two radio cells," (fig. 1, col. 4 lines 20-30).

Consider **claim 18**, Li et al., as modified by Guimont et al., clearly show and disclose the claimed invention **as applied to claim 15 above**, and in addition, Guimont et al. further disclose that adjacent cells are not assigned to use the same frequency by the frequency plan, reading on the claimed "assigning makes at least one of the sub-carriers available to exactly one radio cell in the at least two radio cells," (fig. 1, col. 1 lines 45-50).

Consider **claim 19**, Li et al., as modified by Guimont et al., clearly show and disclose the claimed invention **as applied to claim 15 above**, and in addition, Guimont et al. further disclose that in a cell structure having seven cells **10** per cluster **12**, there are seven frequency groups **14** identified and differentiated from each other by the alphabetic labels "A" through "G" corresponding to the cells 10(1)-10(7), respectively. Each frequency group **14** is divided into a plurality (n) of sub-frequency groups **14(1)-14(n)**. Thus, frequency group A includes sub-frequency groups A(1) through A(n), frequency group B includes sub-frequency groups B(1) through B(n), and so on up through the sub-frequency groups G(1) through G(n) of frequency group G, reading on the claimed "assigning of the sub-carriers is to n radio cells, making assigned sub-carriers available to at least one radio cell have a frequency spacing of n sub-carriers," (col. 4 lines 20-40).

Consider **claim 20**, Li et al., as modified by Guimont et al., clearly show and disclose the claimed invention **as applied to claim 15 above**, and in addition, Guimont et al. further disclose that in spite of the precautions taken to

avoid interference, it is known that interference does occur in cellular systems like that previously described. One aspect of this interference originates from adjacent frequency communications occurring simultaneously in cells 10 of the same or other clusters 12 (i.e., adjacent channel interference), reading on the claimed "assigning makes at least some adjacent sub-carriers in the frequency band available to at least one radio cell," (col. 5 lines 12-20).

Consider **claim 26**, Li et al., as modified by Guimont et al., clearly show and disclose the claimed invention **as applied to claim 15 above**, and in addition, Ma et al. further disclose that a wireless terminal communicates over a shared OFDM band, reading on the claimed "cellular radio communications system is an orthogonal frequency division multiplexing system," (paragraph 10).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have sub bands of an OFDM band as taught by Ma et al. in the method of Guimont et al., in order to efficiently create a frequency plan.

Consider **claim 27**, Reinhardt clearly shows and discloses frequency plan revision proposal is evaluated to determine whether it is compatible with the current cell configuration by insuring that sufficient frequencies having appropriate operating modes are available for assignment to meet the traffic and control channel requirements and availability of the included cell transceivers. Available frequencies in the cellular frequency band are divided in accordance with the frequency plan into frequency groups **14**, with the frequency groups

assigned amongst the cells **10** of each cluster **12** such that the radio frequencies of the cellular band are reused in each cluster, reading on the claimed “radio communication system of cellular construction configured as a multi-carrier system using at least one frequency band having sub-carriers for transmission of information, comprising at least two radio cells; at least one control device assigning the sub-carriers of the at least one frequency band to said at least two radio cells so that the sub-carriers are temporarily available to each radio cell for transmission of information; temporarily each of the sub-carriers is available to a subset of the at least two radio cells for transmission of information,” (abstract, fig. 1, col. 4 lines 19-40).

However, Guimont et al. fail to specifically disclose that the sub-carriers are allocated during different time periods.

In the same field of endeavor, Ma et al. clearly show and disclose a method of communicating over a shared OFDM band comprising: generating and transmitting a low rate mode OFDM transmission in a first frequency band of the OFDM band; generating and transmitting a burst-mode transmission in a second frequency band of the OFDM band, the first frequency band being distinct from the second frequency band (paragraph 86). FIG. 2 shows an example of time-frequency resource allocation for two different OFDM modes referred to as Mode-1 and Mode-2, which changes over time (Therefore, the modes are representative of periods of time). For symbol periods t_i through t_{i+9} , a first allocation is shown with the first frequency band 51 assigned to Mode-1 traffic

and the second frequency band 53 assigned to Mode-2 traffic. During symbol duration t_{i+10}, t_{i+11} , the entire OFDM band 50 is dedicated to Mode-2 traffic. During symbol duration t_{i+10} and onward, the first frequency band 51 is assigned to Mode-2 traffic while the second frequency band 53 is assigned to Mode-1 traffic, reading on the claimed "assigning the sub-carriers of the at least one frequency band to said at least two radio cells during a first time period, and that during a second time period temporarily each of the sub-carriers is available," (paragraphs 124, 125).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to assign different sub-carriers to modes that are implemented at different periods as taught by Ma et al. in the method of Guimont et al., in order to efficiently create a frequency plan.

Consider **claim 28**, Reinhardt clearly shows and discloses frequency plan revision proposal is evaluated to determine whether it is compatible with the current cell configuration by insuring that sufficient frequencies having appropriate operating modes are available for assignment to meet the traffic and control channel requirements and availability of the included cell transceivers. Available frequencies in the cellular frequency band are divided in accordance with the frequency plan into frequency groups **14**, with the frequency groups assigned amongst the cells **10** of each cluster **12** such that the radio frequencies of the cellular band are reused in each cluster, reading on the claimed "control device of a radio communication system of cellular construction, that is

configured as a multi-carrier system having at least two radio cells with at least one frequency band having sub-carriers for transmission of information in the at least two radio cells; means for temporarily assigning the sub-carriers of the at least one frequency band to the at least two radio cells so that the sub-carriers are available to each radio cell for the transmission of the information; means for temporarily assigning the sub-carriers of the at least one frequency band among the at least two radio cells so that each of the sub-carriers is available to a subset of the at least two radio cells for the transmission of the information," (abstract, fig. 1, col. 4 lines 19-40).

However, Guimont et al. fail to specifically disclose that the sub-carriers are allocated during different time periods.

In the same field of endeavor, Ma et al. clearly show and disclose a method of communicating over a shared OFDM band comprising: generating and transmitting a low rate mode OFDM transmission in a first frequency band of the OFDM band; generating and transmitting a burst-mode transmission in a second frequency band of the OFDM band, the first frequency band being distinct from the second frequency band (paragraph 86). FIG. 2 shows an example of time-frequency resource allocation for two different OFDM modes referred to as Mode-1 and Mode-2, which changes over time (Therefore, the modes are representative of periods of time). For symbol periods t_i through t_{i+9} , a first allocation is shown with the first frequency band 51 assigned to Mode-1 traffic and the second frequency band 53 assigned to Mode-2 traffic. During symbol

duration t_{i+10}, t_{i+11} , the entire OFDM band 50 is dedicated to Mode-2 traffic. During symbol duration t_{i+10} and onward, the first frequency band 51 is assigned to Mode-2 traffic while the second frequency band 53 is assigned to Mode-1 traffic, reading on the claimed "assigning the sub-carriers of the at least one frequency band during a first time period so that the sub-carriers are temporarily available, and assigning the sub-carriers of the at least one frequency band during a second time period so that each of the sub-carriers is temporarily available," (paragraphs 124, 125).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to assign different sub-carriers to modes that are implemented at different periods as taught by Ma et al. in the method of Guimont et al., in order to efficiently create a frequency plan.

7. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Guimont et al. (U.S. Patent # 6,052,593)** in view of **Ma et al. (Pub # 2004/001429 A1)**, and in further view of **Wang et al. (U.S. Patent # 6,917,580 B2)**.

Consider **claim 17**, and as applied to **claim 16 above**, Guimont et al., as modified by Ma et al., clearly show and disclose the claimed invention except that the all the sub-carriers are assigned to exactly one cell.

In the same field of endeavor, Wang et al. clearly show and disclose a cellular communication system for wireless telecommunication on the basis of an OFDM scheme. Three cells ($C_1 C_2 C_3$) are divided into three sectors. The entire

frequency band of the wireless cellular OFDM system is also divided into three subbands. Within one cell (C_1 C_2 C_3) subband is allocated to each sector, reading on the claimed "assigning makes each of the sub-carriers available to exactly one radio cell in the at least two radio cells," (abstract, col. 1 lines 53-55).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to designate subbands to the sectors in one cell as taught by Wang et al. in the method of Guimont et al., as modified by Ma et al., in order to efficiently create a frequency plans.

8. **Claims 21 and 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Guimont et al. (U.S. Patent # 6,052,593)** in view of **Ma et al. (Pub # 2004/001429 A1)**, and in further view of **Li et al. (Pub # U.S. 2002/0147017)**.

Consider **claim 21**, and **as applied to claim 15 above**, Guimont et al., as modified by Ma et al., clearly show and disclose the claimed invention except that the all the sub-carriers are allocated using an algorithm that includes a code.

In the same field of endeavor, Li et al. clearly show and disclose a method for allocating sub-carriers in a multi-cell, multi-subscriber wireless systems using orthogonal frequency division multiplexing (OFDM) (paragraphs 2 and 24). A procedure of selective sub-carrier allocation including algorithms used by a base station for sub-carrier selections. These algorithms are conceived to be a self-consistent sequence of steps leading to a desired result. The steps are those requiring physical manipulations of physical quantities that take the form of

electrical or magnetic signals that are referred to as bits, values, elements, symbols, characters, terms, numbers, or the like, reading on the claimed "assigning of the sub-carrier takes place in accordance with an algorithm that includes use of a code," (paragraphs 31 and 33).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an algorithm for sub-carrier allocation as taught by Li et al. in the method of Guimont et al., as modified by Ma et al., in order to efficiently create a frequency plans.

Consider **claim 22**, the combination of Guimont et al. and Ma et al., as modified by Li et al., clearly show and disclose the claimed invention **as applied to claim 21 above**, and in addition, Li et al. further disclose base station assigns desirable clusters to the subscriber making the request. A cluster allocation and load scheduling controller **1301**, in the base station, collects all the necessary information for making the decision on cluster allocation, and informs the subscribers about the decisions through control signal channels, reading on the claimed "assigning makes the sub-carriers used by base stations of particular radio cells available for transmission of broadcast information," (paragraphs 88-89).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have base stations collect and send information to the mobile stations as taught by Li et al. in the method of Guimont et al., as modified by Ma et al., in order to efficiently create a frequency plans.

9. **Claim 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Guimont et al. (U.S. Patent # 6,052,593)** and **Ma et al. (Pub # 2004/001429 A1)** in view of **Li et al. (Pub # U.S. 2002/0147017)**, and in further view of **Frodigh et al. (U.S. Patent # 5,726,978)**.

Consider **claim 23**, and as applied to **claim 22 above**, the combination of Guimont et al., and Ma et al., as modified by Li et al., clearly show and disclose the claimed invention except that the information sent over the channel is used for handovers.

In the same field of endeavor, **Frodigh et al.** clearly show and disclose a method of adaptive channel allocation in an OFDM system. The system provides an allocation of sub-carriers to each link of the OFDM system, reading on the claimed "method for managing radio resources in a cellular radio communications system configured as a multi-carrier system," (col. 4 lines 26-30). The system includes a dedicated control channel (DCCH) that is both an uplink and a downlink channel for transmitting control information for handovers, reading on the claimed "broadcast information is used to decide on handovers," (col. 7 lines 30-32).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use control information for handovers as taught by **Frodigh et al.** in the method of **Guimont et al** and **Ma et al.**, as

modified by Li et al., in order to efficiently perform handovers in an OFDM system.

10. **Claims 24-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Guimont et al. (U.S. Patent # 6,052,593)** and **Ma et al. (Pub # 2004/001429 A1)**, in view of **Li et al. (Pub # U.S. 2002/0147017)** and **Frodigh et al. (U.S. Patent # 5,726,978)**, and in further view of **Obayashi (Pub # U.S. 2002/0082016 A1)**.

Consider **claim 24**, and as applied to **claim 23 above**, the combination of Guimont et al. and Ma et al., as modified by Li et al. and Frodigh et al., clearly show and disclose the claimed invention except that the amplitudes of the control information are determined.

In the same field of endeavor, Obayashi clearly show and disclose a mobile communication terminal apparatus which performs radio communication with base stations and selects the base station optimal for a handover in advance based on the electric field intensity values of several previous times as well as the weakest value, from the monitor result of the pilot channel, reading on the claimed "determining amplitudes of the broadcast information in subscriber stations receiving the broadcast information," (abstract and paragraph 92).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to the intensity of the pilot as taught by

Obayashi in the method of Guimont and Ma et al., as modified by Li et al. and Frodigh et al., in order to efficiently perform handovers in an OFDM system.

Consider **claim 25**, and as applied to **claim 24 above**, the combination of Guimont et al. and Ma et al., as modified by Li et al. and Frodigh et al., clearly show and disclose the claimed invention except that the amplitudes of the control information are determined.

In the same field of endeavor, Obayashi clearly show and disclose that a base station for handover is selected based on the average height of the electric field intensity values from the monitor result of the pilot channel, reading on the claimed "determining a metric of the amplitudes of the broadcast information transmitted from one of the base stations on the sub-carriers available to the one of the base stations," (abstract and paragraph 92).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to the intensity of the pilot as taught by Obayashi in the method of Guimont and Ma et al., as modified by Li et al. and Frodigh et al., in order to efficiently perform handovers in an OFDM system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaime M. Holliday whose telephone number is (571)

272-8618. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jaime Holliday
Jaime Holliday
Patent Examiner


JOSEPH FEILD
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